

FORM PTO-1390 (Modified) (REV 11-2000)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		ATTORNEY'S DOCKET NUMBER <b>101215-69</b>	
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371				U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR <b>09/936959</b>	
INTERNATIONAL APPLICATION NO. <b>PCT/EP00/02372</b>		INTERNATIONAL FILING DATE <b>17 March 2000 (17.03.00)</b>		PRIORITY DATE CLAIMED <b>18 March 1999 and 17 December 1999</b>	
TITLE OF INVENTION <b>ROTARY PRESS WITH EXCHANGEABLE PUNCHES</b>					
APPLICANT(S) FOR DO/EO/US <b>Herbert SCHULZE, Dietrich GARBE and Jurgen PAGEL</b>					
Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:					
<ol style="list-style-type: none"> <li>1. <input checked="" type="checkbox"/> This is a <b>FIRST</b> submission of items concerning a filing under 35 U.S.C. 371.</li> <li>2. <input type="checkbox"/> This is a <b>SECOND</b> or <b>SUBSEQUENT</b> submission of items concerning a filing under 35 U.S.C. 371.</li> <li>3. <input checked="" type="checkbox"/> This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (24) indicated below.</li> <li>4. <input type="checkbox"/> The US has been elected by the expiration of 19 months from the priority date (Article 31).</li> <li>5. <input checked="" type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371 (c) (2)) <ol style="list-style-type: none"> <li>a. <input type="checkbox"/> is attached hereto (required only if not communicated by the International Bureau).</li> <li>b. <input checked="" type="checkbox"/> has been communicated by the International Bureau.</li> <li>c. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US).</li> </ol> </li> <li>6. <input checked="" type="checkbox"/> An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)). <ol style="list-style-type: none"> <li>a. <input checked="" type="checkbox"/> is attached hereto.</li> <li>b. <input type="checkbox"/> has been previously submitted under 35 U.S.C. 154(d)(4).</li> </ol> </li> <li>7. <input type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3)) <ol style="list-style-type: none"> <li>a. <input type="checkbox"/> are attached hereto (required only if not communicated by the International Bureau).</li> <li>b. <input type="checkbox"/> have been communicated by the International Bureau.</li> <li>c. <input type="checkbox"/> have not been made; however, the time limit for making such amendments has NOT expired.</li> <li>d. <input type="checkbox"/> have not been made and will not be made.</li> </ol> </li> <li>8. <input type="checkbox"/> An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).</li> <li>9. <input type="checkbox"/> An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).</li> <li>10. <input checked="" type="checkbox"/> An English language translation of the annexes of the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).</li> <li>11. <input checked="" type="checkbox"/> A copy of the International Preliminary Examination Report (PCT/IPEA/409).</li> <li>12. <input checked="" type="checkbox"/> A copy of the International Search Report (PCT/ISA/210).</li> </ol> <p><b>Items 13 to 20 below concern document(s) or information included:</b></p> <ol style="list-style-type: none"> <li>13. <input type="checkbox"/> An Information Disclosure Statement under 37 CFR 1.97 and 1.98.</li> <li>14. <input type="checkbox"/> An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.</li> <li>15. <input checked="" type="checkbox"/> A <b>FIRST</b> preliminary amendment.</li> <li>16. <input type="checkbox"/> A <b>SECOND</b> or <b>SUBSEQUENT</b> preliminary amendment.</li> <li>17. <input type="checkbox"/> A substitute specification.</li> <li>18. <input type="checkbox"/> A change of power of attorney and/or address letter.</li> <li>19. <input type="checkbox"/> A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825.</li> <li>20. <input type="checkbox"/> A second copy of the published international application under 35 U.S.C. 154(d)(4).</li> <li>21. <input type="checkbox"/> A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).</li> <li>22. <input checked="" type="checkbox"/> Certificate of Mailing by Express Mail</li> <li>23. <input type="checkbox"/> Other items or information:</li> </ol>					

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR 1.53) <b>09/936959</b>		INTERNATIONAL APPLICATION NO. <b>PCT/EP00/02372</b>		ATTORNEY'S DOCKET NUMBER <b>101215-69</b>	
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24. The following fees are submitted:				<b>CALCULATIONS PTO USE ONLY</b>	
<b>BASIC NATIONAL FEE ( 37 CFR 1.492 (a) (1) - (5) ) :</b>					
<input type="checkbox"/>	Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO .....			<b>\$1000.00</b>	
<input checked="" type="checkbox"/>	International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO .....			<b>\$860.00</b>	
<input type="checkbox"/>	International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO .....			<b>\$710.00</b>	
<input type="checkbox"/>	International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4) .....			<b>\$690.00</b>	
<input type="checkbox"/>	International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4) .....			<b>\$100.00</b>	
<b>ENTER APPROPRIATE BASIC FEE AMOUNT =</b>				<b>\$860.00</b>	
Surcharge of <b>\$130.00</b> for furnishing the oath or declaration later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492 (e)).				<b>\$0.00</b>	
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE		
Total claims	12 - 20 =	0	x \$18.00	<b>\$0.00</b>	
Independent claims	1 - 3 =	0	x \$80.00	<b>\$0.00</b>	
Multiple Dependent Claims (check if applicable). <input type="checkbox"/>				<b>\$0.00</b>	
<b>TOTAL OF ABOVE CALCULATIONS =</b>				<b>\$860.00</b>	
<input checked="" type="checkbox"/> Applicant claims small entity status. (See 37 CFR 1.27). The fees indicated above are reduced by 1/2.				<b>\$430.00</b>	
<b>SUBTOTAL =</b>				<b>\$430.00</b>	
Processing fee of <b>\$130.00</b> for furnishing the English translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492 (f)).				<b>\$0.00</b>	
<b>TOTAL NATIONAL FEE =</b>				<b>\$430.00</b>	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) (check if applicable). <input type="checkbox"/>				<b>\$0.00</b>	
<b>TOTAL FEES ENCLOSED =</b>				<b>\$430.00</b>	
				Amount to be: refunded	\$
				charged	\$

a. ☐ A check in the amount of \_\_\_\_\_ to cover the above fees is enclosed.

b. ☒ Please charge my Deposit Account No. 14-1263 in the amount of \$430.00 to cover the above fees. A duplicate copy of this sheet is enclosed.

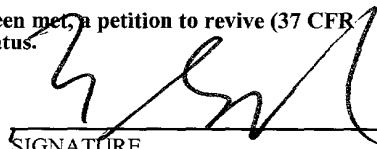
c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 14-1263. A duplicate copy of this sheet is enclosed.

d. ☐ Fees are to be charged to a credit card. **WARNING:** Information on this form may become public. **Credit card information should not be included on this form.** Provide credit card information and authorization on PTO-2038.

**NOTE:** Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

**Bruce S. Londa**  
**NORRIS, McLAUGHLIN & MARCUS, P.A.**  
 220 East 42nd Street, 30th Floor  
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 Tel# 212-808-0700

  
 SIGNATURE

**Bruce S. Londa**  
 NAME

**33,531**  
 REGISTRATION NUMBER

**September 17, 2001**  
 DATE

1002 0000-77-77 17 SEP 2001

**CERTIFICATE OF MAILING BY "EXPRESS MAIL" (37 CFR 1.10)**

Applicant(s): **Herbert SCHULZE, Dietrich GARBE and Jurgen PAGEL**

Docket No.

**101215-69**

09/938959  
Serial No.  
To Be Assigned

Filing Date  
Herewith

Examiner  
To Be Assigned

Group Art Unit  
To Be Assigned

Invention: **ROTARY PRESS WITH EXCHANGEABLE PUNCHES**

I hereby certify that the following correspondence:

**Application for Entry into National Phase**

*(Identify type of correspondence)*

is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under

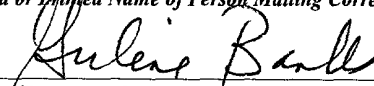
37 CFR 1.10 in an envelope addressed to: The Assistant Commissioner for Patents, Washington, D.C. 20231 on

September 17, 2001

*(Date)*

**Girlene Banks**

*(Typed or Printed Name of Person Mailing Correspondence)*



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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant(s) : Herbert SCHULZE, Dietrich GARBE and Jürgen PAGEL  
PCT Application No.: PCT/EP00/02372  
Serial No. : To Be Assigned  
Filed : Herewith  
For : ROTARY PRESS WITH EXCHANGEABLE PUNCHES  
Art Unit : To Be Assigned  
Examiner : To Be Assigned

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September 17, 2001

BOX PCT  
Hon. Assistant Commissioner For Patents  
Washington, D.C. 20231

**PRELIMINARY AMENDMENT**

Sir:

In advance of prosecution, kindly amend the above-identified application as follows and consider the following remarks:

**IN THE CLAIMS**

Claim 7 (amended). Rotary press according to Claim 1, wherein the interacting zones (1, 29) of the shell surface and the external component (33) are designed as serration or as friction surfaces.

Claim 11 (amended). Rotary press according to Claim 8, wherein the zone (29) of the external component (33) indicates several spring elements (37), lying one behind the other in the movement direction of the punch (6, 7) and arranged in a comb-like manner.

REMARKS

This Preliminary Amendment is being filed to place the claims into conventional format, and to eliminate improper multiple dependency.

Favorable action is respectfully solicited.

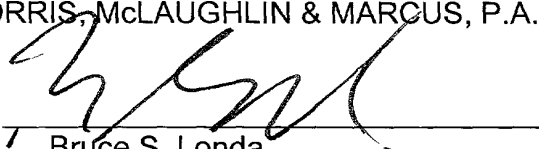
ADDITIONAL FEE

Please charge any insufficiency of fees, or credit any excess, to Deposit Account No. 14-1263.

Respectfully submitted,

NORRIS, McLAUGHLIN & MARCUS, P.A.

By

  
Bruce S. Londa  
Reg. No. 33,531

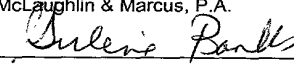
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Norris McLaughlin & Marcus, P.A.

By:

Date:

  
9-17-01

MARKED-UP COPIES OF AMENDED CLAIMS.  
SHOWING CHANGES RELATIVE TO PREVIOUS VERSION

Claim 7 (amended). Rotary press according to [Claims 1, 2 and 6] Claim 1, wherein the interacting zones (1, 29) of the shell surface and the external component (33) are designed as serration or as friction surfaces.

Claim 11 (amended). Rotary press according to [Claims 8 to 10] Claim 8, wherein the zone (29) of the external component (33) indicates several spring elements (37), lying one behind the other in the movement direction of the punch (6, 7) and arranged in a comb-like manner.

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JC03 Rec'd PCT/PTO 17 SEP 2001

ART 34 AMOT

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## ROTARY PRESS WITH EXCHANGEABLE PUNCHES

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### Description

The invention concerns a rotary press with exchangeable punches in accordance with the generic terms of Claims 1 and 12.

The known rotary presses for pressing tablets in particular essentially consist of a rotor with a die table, an upper and lower part, where the upper part and the lower part contain and guide the upper and lower punches engaging in the dies of the die table.

Rotary presses with devices for turning the punches and rotary presses with anti-rotation secured shafts and exchangeable punches attached thereto are known (Technical Rotary Presses of Messrs Korsch Pressen AG / Series TRP 700, which have been on the market since approximately 1995 (information release of Korsch Pressen GmbH for customers, representatives and staff members, Edition No. 1, March 1995)).

In the DE-GM 88 16 064 a rotary press is described where the upper and lower punches have rotational movement around their longitudinal axis directly after passing the press rolls acting on them. The rotation of the upper and lower punches around their longitudinal axis is effected either by means of a frictional connection of the upper and lower punches with acting press rolls arranged directly behind the upper and lower punches, with spring force against the upper and lower punches forward-pressable guide curve sections or by means of an interaction of a serration with a stationary located spur rack arranged at the punch shaft.

By means of the rotational movement of the upper and lower punches directly after the pressing operation and during the withdrawal of the upper and lower punches from the die of the die table, a separation of the upper surface of the pressed tablet from the upper punch should be achieved as a minimum. Where particularly adhesive materials to be pressed are concerned, a rotational movement of the lower punch is also to avoid the adhesion between this and the underneath side of the tablet.

A disadvantage in the frictional connection between the upper and lower punches and the related guide curve sections is, however, the fact that wear of the material occurs in this case and, on the other hand, no defined rotation of the upper and lower punches is carried out. Subsequently, with a varying strength of rotation of the upper and lower punches, the pressed form body can even be destroyed in the process. A disadvantage with the serration arranged at the punch shaft is, on the one hand, the fact that specially designed upper and lower punches must be used and, on the other hand, that a friction between the serrations of upper and lower punches and the relevant, stationary arranged spur rack occurs because the serration of the upper and lower punches is moved together with these in the axis direction of the upper and lower punches.

In the GB-A-155 594, a rotary press is described which is provided with devices for turning the punches, on whose turn-actuated punch shafts exchangeable punches are envisaged.

A particular disadvantage is the fact that this proposed solution cannot be adopted for punch shafts whose head form does not allow a rotation of the punch (roll-guided punches) and/or heads whose microsection surface requires that the heads have to be moved right through in a certain orientation below the press roll (heavy-duty punch).

The invention is based on the task assignment of developing a category-related rotary press where and with which the adhesive effect of the tablet on the upper and lower punches is securely avoided by means of the generation of turn-off forces on the surface of the tablet, in particular where a punch turn is universally ensured with the use of anti-rotation secured punch shafts, meaning, not only with rotation-symmetrical but also with roll-guided punches.



This task assignment is solved according to the invention by the features of the Claims 1 and 12. According to this, the rotary press with anti-rotation secured shafts and exchangeable punches attached thereto are characterised in such a way that the exchangeable punch, opposite its punch shaft in each case, is rotational in design, where a circumferential recess in the trunnion stem of the punch exists, into which a connecting component, in particular a spring thrust piece, engages for the rotational connection of the punch with the punch shaft, and that the shell surface of the exchangeable punch indicates a zone which interacts with a zone of a component arranged location-fixed at the rotary press opposite the punch circumference, in a force-locking or positive locking manner in such a way that the punch receives a rotational movement at a defined point of the pitch circle of the punch circumference.

The external component for the upper punch and the lower punch is radially and elastically bearing-supported as a punch rotating device according to a most preferred embodiment of the invention and executed in such a way that the engagement at the upper and lower punch is separately adjustable and can be brought to differently defined points of the pitch circle, where the external component is radially positional around the pitch circle of the punch circumference.

The preferential execution of the engagement zone of the shell surface of the punch as a separate element allows higher life service and an economical replacement of parts/components subject to wear.

Furthermore and as a result of convenient exchangeability of this separate element, it is possible to adapt production quickly and economically to material-specific features of various press materials, for example when changing over from one product to another.

With a change of the serration, for example, the angular rotation of the punch can be changed, meaning, the path of rotation performed by the punch is extended or shortened. In addition, it is relatively uncomplicated to change over from a positive locking to a force locking connection.

With the invention, rotary presses with rotational and exchangeable punches can be executed for rotation-symmetrical and for roll-guided punches.

According to an alternative embodiment of the invention and instead of the punch, the dies are trunnion-mounted and have a serration or friction surface on their outer sides.

Advantageous further embodiments of the invention result from the Subclaims.

The invention will be better understood by an example of an embodiment, as shown in a drawing, of an upper and lower punch of a rotary press. The drawings illustrate the following items:

- Fig. 1: a schematic vertical cross-section through an upper and lower punch in the working position with the upper and lower punch protruding from the die;
- Fig. 2: the arrangement according to Fig. 1 in the position with the upper and lower punch inserted into the die, including the external component;
- Fig. 3a: a side view (partially cross-sectioned) onto detail I according to Fig. 2, and
- Fig. 3b: a top view of detail I from Fig. 2.

In Fig. 1 a part of a known rotary press is shown in a schematic illustration, consisting of an arrangement of rotor upper part 11, die table 13 with die 14 and rotor lower part 12. The upper punch shaft 15 and the lower punch shaft 16 run in guide bushes 17, 18, which are located in the rotor upper part 11 and in the rotor lower part, respectively, and are anti-rotation secured with fitting pieces 19, 20. The guide bushes 17, 18 have fitting key grooves 21, 22, in which fitting keys 23, 24 of the upper and lower punch shafts 15, 16 are arranged. In this way, the punch shafts 15, 16 are also anti-rotation secured with reference to the rotor 11, 12 and the press roll (not shown), respectively.

A seal ring 25 is arranged in the upper guide bush 17 in order to prevent the penetration of dirt and to avoid lubrication oil losses. The lower shaft guide 18 is protected with a bellows 10.

The normally exchangeable but solidly located punches according to the state of the art are, in accordance with the present invention, executed as exchangeable and rotational upper punches 6 and lower punches 7.

This is achieved by means of a circumferential recess 27, 30 in the stem 8, 9 of the upper and lower punch 6, 7. Into this recess 27, 30, a component engages, for example a spring thrust piece 4, for the purpose of positional fixation. In order to additionally secure this fixation of the rotational punch 6, 7 in the direction of movement, a pin 5 engages into the recess 27, 30.

For the purpose of achieving a positive locking between the rotational punch 6, 7 and an external turning device, a mounted element 1 with an outer serration is arranged on a recessed area of the rotational punch 6, 7. The lock-in carrying effect between this element 1 and the rotational punches 6, 7 is ensured by means of a fitting key 2. The outer serration can be directly applied to the punch 6, 7. The separate application of the outer serration onto a separately mounted element 1 has the advantage that it is possible to eliminate wear economically by replacing the mounted element 1, meaning, the entire punch 6, 7 does not have to be replaced.

In Fig. 2, the arrangement of a rotary press is shown where a punch head 32 with guide rolls 31 is envisaged. This embodiment requires an anti-rotation secured shaft 15, 16 of the upper and lower punch 6, 7 corresponding to the Fig. 1.

In the Fig. 2 there is, furthermore, an external component is shown on the periphery of the pitch circle of the punch circumference which is used as a punch turning device 33.

The punch turning device 33 is mounted near the non-illustrated press roll on a dust ring 34 and is moveable with a skid 35 concentrically to the pitch circle in the press roll zone. As a result, the engaging point of the serration elements 29 (Fig. 2) of the punch turning device 33 with the mounted element 1 with outer serration (Fig. 1) can be adjusted in such a way that the most advantageous point with a sufficiently minimised pressing force, which is just being exerted by the press roll, is set. By way of a threaded rod 28 which is connected to the skid 35, the engaging points of the fixed-located serration elements 29 are individually adjustable in the height to the rotational punch 6, 7. This is necessary in order to be able to react to changed insertion depths of the punches 6, 7.

The fixed-located serration elements 29 are horizontally moveable around the threaded rod 28, acting as a vertical axis, with height-adjustable bearing bushes 26. The horizontal movement is restricted to a zone of a few millimeters by means of an elastic and/or spring element 3. By means of a light pressure, set with the elastic and/or spring element 3, onto the rotational punch 6, 7 a carrying torque with a simultaneous evading possibility of the system is produced.

A defined turning movement and, subsequently, a high-precision and synchronous run-in of the serration of the mounted element 1 and of the fixed-located serration elements 29 is not ensured in every case. For this reason, this evading possibility is necessary for a secure and reliable operation.

The high accelerating forces occurring during the impact of the mounted element 1, moving with the circumferential speed of the punches 6, 7, with the outer serration and the fixed-located serration elements 29 can lead to destruction of the serrations at a very early stage. In order to avoid major impact forces of an impulsive nature, the outer serration of the mounted element 1 and the fixed-located serration elements 29 are low-mass in design and executed very elastically as yielding serration elements in according with the illustration in Fig. 3.

In Fig. 3a, in a schematic side view, and in Fig. 3b in a top view, an embodiment of the serration element 29 and the outer serration of the mounted element 1 is shown, where the fixed-located serration element 29 is executed in a comb-type design with spring elements as prongs 37. Numerous prongs 37 of the serration element 29 ensure that one prong 37 succeeds in establishing an engagement (meshing) with the outer serration of the mounted element 1, in which case the outer serration of the mounted element 1 indicates a purposeful tooth form such as a saw tooth form, trapezoidal tooth form.

The joint between the fixed-located punch shaft 15, 16 and the rotational punch 6, 7 is sealed off by means of a seal 36, such as a labyrinth seal, to protect against material dust and fouling matter of the bearing locations.

As a punch turning device 33 a tangential friction wheel or similar, acting on the punch 6,7, for the purpose of establishing force-locking engagement is also conceivable.

A non-illustrated alternative embodiment of the invention envisages that, instead of the punch 6, 7, the dies 14 are located in trunnion supports, and that these dies have on their outer sides a serration or a friction surface.

And with such a solution also, forces can be produced on the upper surface of the tablets which prevent a sticking of the tablet on the upper and/or lower punch.

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### Reference Numbers List

1. Element with outer serration
2. Fitting key
3. Spring element
4. Component, spring thrust element
5. Pin
6. Upper punch
7. Lower punch
8. Punch stem
9. Punch stem
10. Bellows
11. Rotor upper part
12. Rotor lower part
13. Die table
14. Die
15. Upper punch shaft
16. Lower punch shaft
17. Guide bush
18. Guide bush
19. Fitting piece
20. Fitting piece
21. Fitting key groove
22. Fitting key groove
23. Fitting key
24. Fitting key
25. Seal ring

- 26. Bearing bush
- 27. Recess
- 28. Threaded rod
- 29. Serration element
- 30. Recess
- 31. Guide roll
- 32. Punch head
- 33. External component  
(punch turning device)
- 34. Dust ring
- 35. Skid
- 36. Seal
- 37. Spring element (prongs)

### Patent Claims

1. Rotary press with anti-rotation secured shafts and exchangeable punches attached thereto,  
wherein  
the exchangeable punch (6, 7), in each case, is executed in a rotational manner opposite its punch shaft, where a circumferential recess (27, 30) exists in the stem (8, 9) of the punch (6,7), into which a connecting component, in particular a spring thrust piece (4) engages for a rotational connection of the punch with the punch shaft, and that the shell surface of the exchangeable punch (6,7) indicates a zone (1) which interacts with a zone (29) of an component (33) arranged location-fixed at the rotary press opposite the punch circumference, with a force-locking or a positive locking effect in such a way that the punch (6,7) receives a turning movement at a defined point of the pitch circle of the punch circumference.
2. Rotary press according to Claim 1,  
wherein  
the shell surface of the upper and/or the lower punch (6,7) indicates such a zone (1) for interacting with zones (29) of the external component (33).
3. Rotary press according to Claim 1,  
wherein  
the external component (33) for the upper punch (6) and the lower punch (7) is separately adjustable in design and can be brought into differently defined points of the pitch circle, where the external component (33) is radially positionable around the pitch circle of the punch circumference.
4. Rotary press according to Claim 1,  
wherein  
the external component (33) has a bearing location which is radially elastic.



5. Rotary press according to Claim 1,  
w h e r e i n  
a seal (36) in the form of an element such as a labyrinth seal is envisaged for the purpose of sealing between the punch shaft (15, 16) and the rotational punch (6, 7).
6. Rotary press according to Claim 1,  
w h e r e i n  
the force-locking or positive locking zone (1) of the shell surface of the exchangeable punch (6, 7) interacting with the zone (29) of the external component (33) is executed as a separated and exchangeable element of the punch (6, 7).
7. Rotary press according to Claims 1, 2 and 6,  
w h e r e i n  
the interacting zones (1, 29) of the shell surface and the external component (33) are designed as serration or as friction surfaces.
8. Rotary press according to Claim 7,  
w h e r e i n  
the serrations of the interacting zones (1, 29) are low in mass and are designed very elastically in the circumferential direction.
9. Rotary press according to Claim 8,  
w h e r e i n  
the zone (29) of the external component (33) is executed as an elastically yielding spring element in the movement direction of the punch, and this being in such a way that the occurring impact energy can be absorbed and, simultaneously, a secure and reliable engagement into the zone (1) of the shell surface of the punch (6, 7) is ensured.

10. Rotary press according to Claim 8,  
w h e r e i n  
the zone (1) of the shell surface (1) of the punch (6, 7) indicates a tooth profile such as a trapezoidal profile, saw tooth profile, adapted to the zone (29) of the external component (33).
11. Rotary press according to Claims 8 to 10,  
w h e r e i n  
the zone (29) of the external component (33) indicates several spring elements (37), lying one behind the other in the movement direction of the punch (6, 7) and arranged in a comb-like manner.
12. Rotary press with anti-rotation secured shafts and exchangeable punches attached thereto, as well as with dies,  
w h e r e i n  
the dies (14) are trunnion-supported and indicate on their outer sides a serration or a friction surface, which interacts with a zone (29) of a component (33) arranged location-fixed at the rotary press opposite the punch circumference, in a force-locking or positive locking manner in such a way that the punch (6,7) receives a rotational movement at a defined point of the pitch circle of the punch circumference.

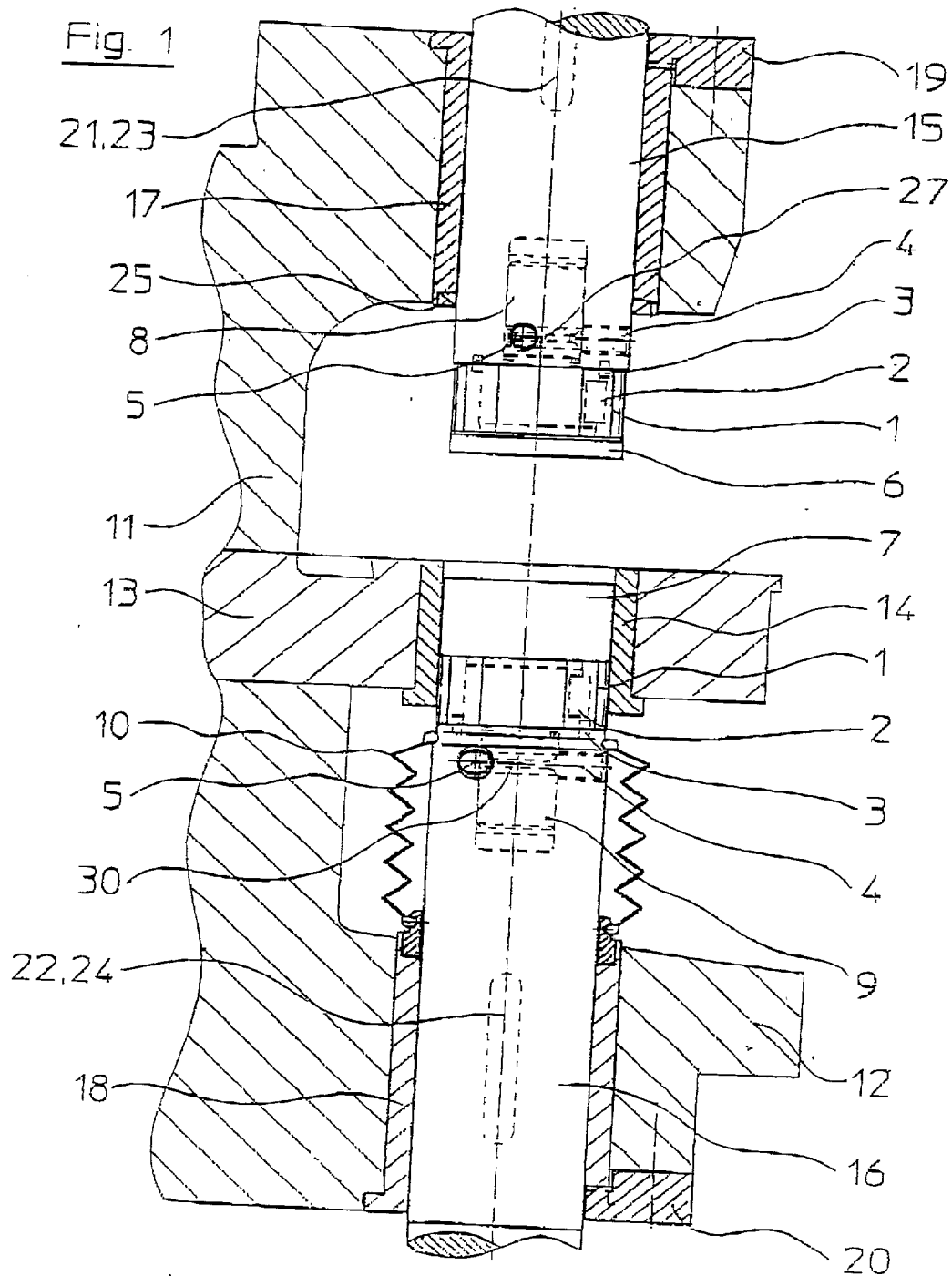
### SUMMARY

The invention concerns a rotary press with anti-rotation secured shafts and exchangeable punches attached thereto.

The task assignment of the invention, to develop a category-related rotary press according to which a punch turn is universally ensured with the use of anti-rotation secured punch shafts, meaning, not only with rotation-symmetrical but also with roll-guided punches, is solved in such a way that the exchangeable punch 6, 7 is executed in a rotational manner, where a circumferential recess 27, 30 in the stem 8, 9 of the punch 6,7 is envisaged, into which a component such as a spring thrust piece 4 engages for the purpose of fixation, and that the shell surface of the exchangeable punch 6,7 indicates a zone which interacts with a zone of the external component, either force-locking or positive locking, in such a way that the punch 6, 7 receives a turning movement at a defined point of the pitch circle of the punch circumference.

- Fig. 2 -

Fig. 1



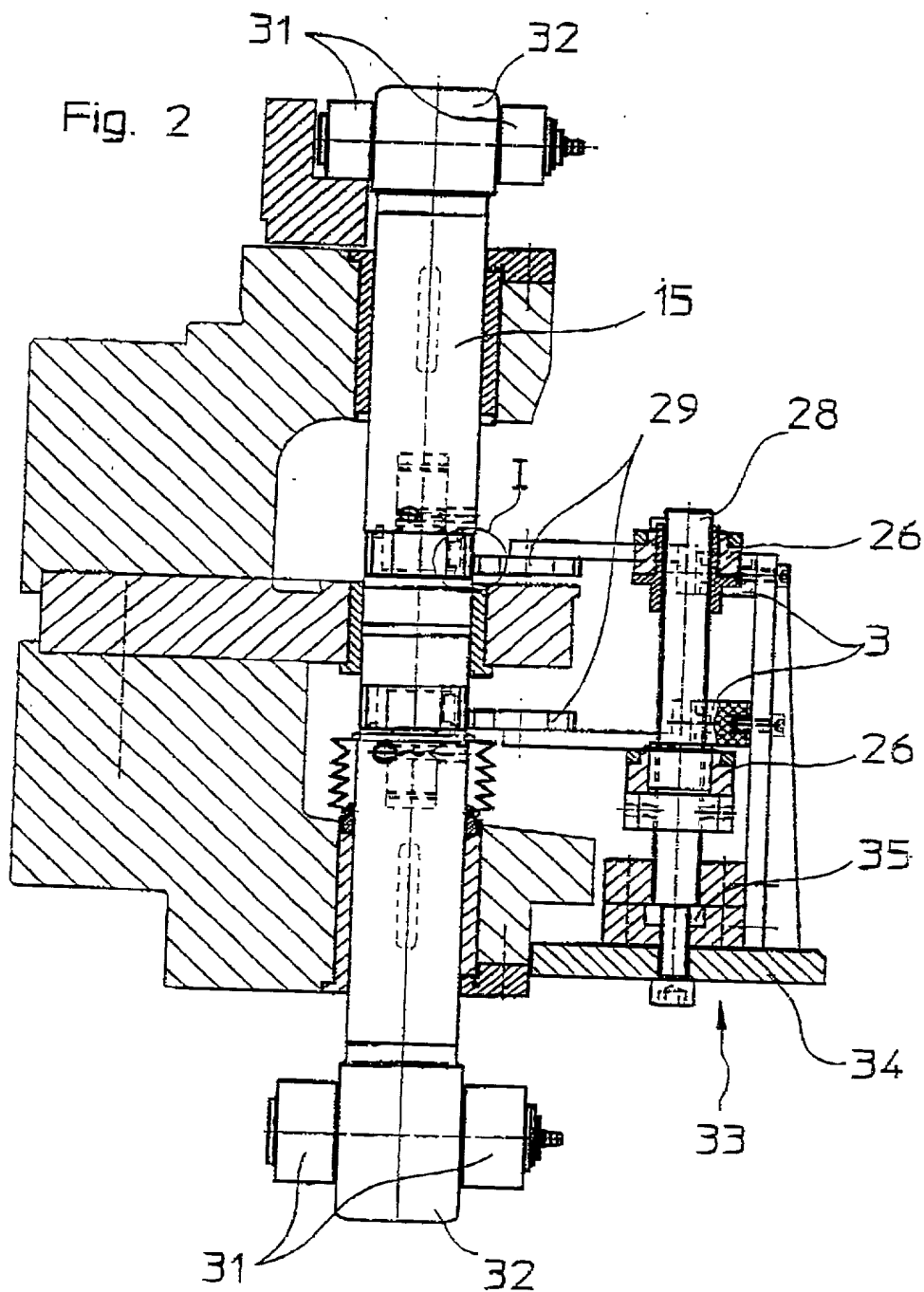


Fig. 3a  
(Detail I aus Fig. 2)

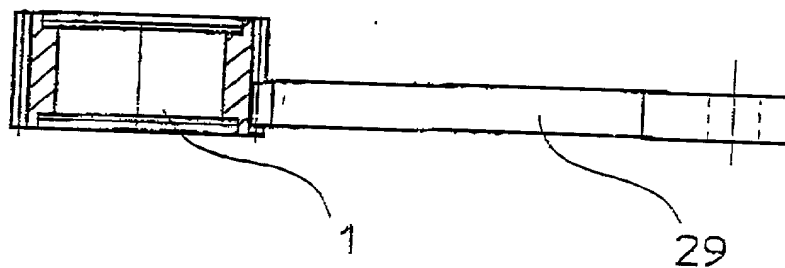
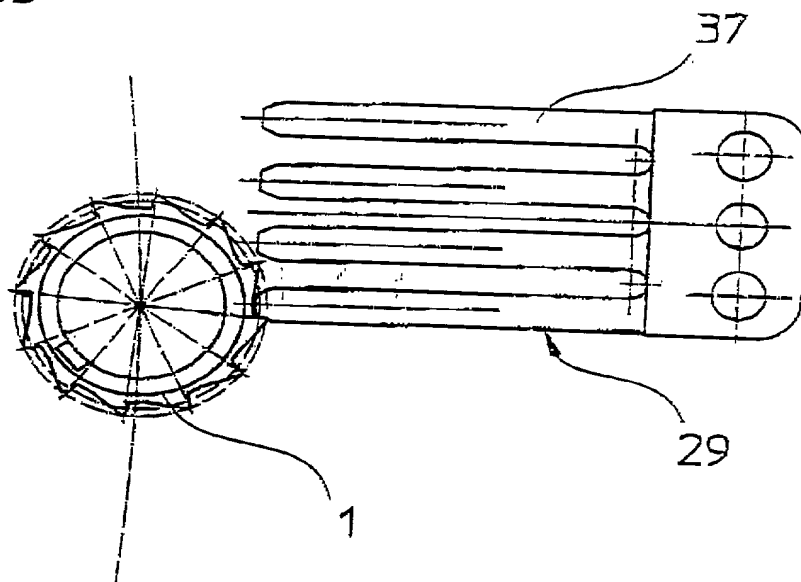


Fig. 3b



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#3  
If each inventor understands English, the Declaration and Power of Attorney below is suitable for use when filing a regular patent application and also when entering the national stage, in the case of an International application designating the USA under the PCT.

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**COMBINED DECLARATION AND POWER OF ATTORNEY FOR  
PATENT APPLICATION**

Attorney Docket No.  
101215-69

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,  
I believe I am the original, first and sole inventor (if only one name is listed below at 201) or an original,  
first and joint inventor (if plural names are listed below at 201-205) of the subject matter which is claimed  
and for which a patent is sought on the invention entitled

Rotary Press with Exchangeable Punches

the specification of which (check one)

\_\_\_\_\_ is attached hereto

☒ was filed on 17 March 2000

under Serial Number PCT/EP00/02372 and was amended on \_\_\_\_\_  
(if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification,  
including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in  
accordance with Title 37, Code of Federal Regulations, Section 1.56.

I list below any prior foreign application(s) for patent or inventor's certificate in respect of which foreign  
priority benefits are claimed under 35 USC 119; and any prior foreign application(s) for patent or inventor's  
certificate in respect of which such foreign priority rights are not claimed and which has a filing date before  
that of any application in respect of which such foreign priority benefits are claimed:

Application Number	Country	Filing Date (day, month, year)	Priority Claimed under 35 USC 119
199 13 979.2	Germany	18 March 1999	YES: <input checked="" type="checkbox"/> NO: _____
199 63 263.4	Germany	17 December 1999	YES: <input checked="" type="checkbox"/> NO: _____
			YES: _____ NO: _____

I hereby claim the benefit under Title 35, United States Code, §119(e) of any United States provisional  
application(s) listed below.

Application No.	Filing Date

I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith:

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<p>I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.</p>			
Signature of Inventor 201		<i>Robert Lobe</i>	Date <i>20.11.01</i>
Signature of Inventor 202		<i>Dietrich Garbe</i>	Date <i>20.11.01</i>
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Signature of Inventor 204			Date
Signature of Inventor 205			Date